THE DATE OF THE CRUCIFIXION.

The present paper will be confined to the technical side of the chronology with which alone I feel competent to deal, i.e. with that side which turns on calendars and on the relation of calendars to astronomical phenomena. Questions of the relative authority of St John and the Synoptists, of the duration of our Lord's ministry, of the date when it commenced, of His age either at the commencement or at the close of His ministry I leave to professed theologians. To me all these questions appear insoluble in the present state of our knowledge; whereas for the direct question of the date of the Crucifixion we have some technical evidence, which, even if not quite conclusive, is well worth considering.

For the whole question of the date of the Crucifixion, considered as a problem both of historical and of technical chronology, Mr Turner's article on Chronology (New Testament) in Hastings's "Dictionary of the Bible," is the *locus classicus*[1]. Keim's treatment of the question is more exhaustive, but Mr Turner's article holds the field at the present moment, and his conclusions have been accepted by Canon Sanday in his article on Jesus Christ in the same Dictionary.

We know from the Gospels that Christ was crucified on Friday, the 14th or 15th of Nisan, when Pontius Pilate was present as governor at Jerusalem and Caiaphas was high priest. Mr Turner infers from these data that the Crucifixion cannot have been earlier than A.D. 28 or later than A.D. 33. To remove all doubt, I will add the years 34 and 35, which many scholars have regarded as possible. The question for technical chronology

[1] See also Mr Turner's shorter, but more recent article on Chronology, Biblical, in the *Encyclopaedia Britannica*, tenth edition, vol. XXVII.

to decide is:—In which, if any, of the years 28–35 did Nisan 14 or Nisan 15 fall on a Friday? This involves a consideration of the Jewish Calendar. That calendar belongs to the class which we are accustomed to call luni-solar, i.e. it attempts at once to make each calendar month begin at the new moon and to make each calendar year begin at a particular season. Since neither the number of days in the lunar month nor the number of lunar months in the solar year is an integer, it follows that the number of days in the month and of months in the year in such a calendar must both be variable. The month therefore is made to consist of a fixed number of 29 days with a possible 30th day, and the year to consist of a fixed number of 12 months with a possible 13th month. We are thus presented with two problems: (1) At what exact point in the moon's course did the calendar month begin, and what rule determined the intercalation of a 30th day? (2) At what exact point in the sun's course did the calendar year begin, and what rule determined the intercalation of a 13th month?

(1) I take the former of these questions first. The beginning of the lunar month is a chronological moment which can be directly obtained by empirical methods available both to the learned and to the unlearned. The result is that with the single exception of the Roman, no calendar which professed to take the moon for its guide, has allowed the beginning of the calendar month to stray more than a day or two from its theoretical position in relation to the astronomical new moon. But as the date of the Crucifixion depends on the coincidence of a particular day of the week with a particular day of the lunar month, this difference of a day or two is all important. Now the simplest and oldest method of fixing the beginning of a calendar month is by observation of the moon. For a short time on either side of its conjunction with the sun the moon is invisible to the naked eye. The reappearance of the crescent in the evening sky is the first visible sign that a new moon has begun to wax, and this event was taken by almost all nations as marking the beginning of a new calendar month. In time, however, most nations substituted for the observed date of the *phasis* or first appearance of the crescent, a calculated date

either for the phasis or for the astronomical new moon, that is, for the actual but invisible conjunction between sun and moon. The first question therefore for us to determine is whether the first century Jews had abandoned empirical methods for calculations.

All our documentary evidence goes to show that no such change had taken place. Ignoring later authorities we have quite a mass of evidence in the Mishna which proves that empirical methods only were in use not only when the Temple was standing, but even when the Mishna itself was compiled. See the passages cited in Schürer's Jewish People in the Time of Christ, Eng. Tr. I. ii. pp. 363—377, and the whole tract *Rosh hashana*. If anyone thinks that these rules are a mere archaism on the part of the Rabbis who composed these tracts, let him compare the differences they indicate between the methods in use in the time of the second Temple, and the methods in use in their own day. Both in the case of the intercalary month and of the intercalary day the methods they cite as in use in their own day would make the date or name of the new month more difficult to anticipate than those they cite as in use while the Temple was still standing. One rule they give is as follows. No month was to have less than twenty-nine or more than thirty days, and in Arachin ii. 2 we are told that there had never been more than eight or less than four months of thirty days in one year. The effect of this would be that observation would only be necessary on the evening at the close of the twenty-ninth day. If the moon were visible that evening there would be a thirtieth day; if it were invisible there would not. If the appearance was reported to the Sanhedrim and sufficiently attested by a fixed time on the following afternoon the new month was begun. Otherwise a thirtieth day was added to the old month and a new month begun on the following evening. It will be observed that cloudy weather could not postpone the beginning of a new month by more than one day.

Mr Turner and Professor Ramsay[1] incline to believe that some definite calendar rules were already in use in the first

[1] *Expositor*, Fifth Series, vol. x, pp. 431, 432.

century. The chief reason for believing that a calendar in which dates could be calculated beforehand had been substituted for one in which they rested on observation is the practical inconvenience of the older system: but against this it may be alleged that an oriental people is too dilatory to feel any inconvenience in having its arrangement altered by one day. Professor Ramsay, who dates the change about 50 A.D., supports it by the calendar reforms of which he has found evidence all over Western Asia. But, as he himself admits, the new calendars are all of one type; they are all solar calendars, in which each year contains 365 days with an extra day every fourth year, and their months are purely artificial. If this movement had affected the Jewish Calendar, it would not have substituted calculations of new moon for observations of the phasis, it would have ignored both new moon and phasis altogether. The fact that the Jewish Calendar remained luni-solar proves that it was not affected by this movement.

Attention has been drawn to the supposed attacks on the old Jewish Calendar, to be found in the apocryphal literature of this age. The attack in the Book of Jubilees is directed not against an empirical as opposed to a calculable luni-solar calendar, but against the luni-solar calendar itself with its intercalary month; but the value of the Book of Jubilees for this question will be greatly lessened if Professor Charles is right in dating it in the second century B.C. The Books of Enoch describe the motion of sun and moon through the zodiac, and mention cycles compiled out of their respective periods, but do not suggest any calendar reforms. The cycles mentioned are good evidence of the astronomical knowledge of the time, but there is no evidence for an authoritative calendar based on them.

Mr Turner goes the length of suggesting one specific calendar rule which is, as will appear, essential to his date for the Crucifixion, viz. that Adar never consisted of more than 29 days. Even if such a rule existed for any month, it would hardly be likely to exist for Adar, because it would be important that the Passover should be observed on the correct astronomical day. In the same way the Turks and Arabs, although they possess a calendar, nevertheless fix the com-

mencement of the fast of Ramadan by observation (Ideler, I. 477, 568), and we learn from the tract *Rosh hashana* (i. 3, 4) in the Mishna that Nisan was one of the six months the commencement of which was still announced by messengers from Jamnia after the Fall of Jerusalem. Even when the Mishna was compiled it was one of the two months in which the witnesses, coming with the news of the new moon, were allowed to profane the sabbath, and we are told that during the existence of the Temple it had been lawful to profane the sabbath for any month. A relic of the former uncertainty as to the length of Adar remains in the double celebration of the Jewish Passover, on Nisan 15 and Nisan 16, the latter date representing the day which would have been Nisan 15 if Adar had comprised 30 days[1]. This double celebration is supposed to have originated among the Jews of the dispersion, and to have aimed at making it certain that one celebration or other should be on the day adopted at Jerusalem. The nearer Jews, those namely of Palestine and Babylon, were according to *Rosh hashana* (ii. 4) informed by beacons of the inauguration of the new month at Jerusalem, which would have been unnecessary if the day could have been calculated by a calendar rule.

There is no sufficient reason for setting aside the only documentary evidence that we possess on the determining of the commencement of a new month by the Jews. The next question is how are we to calculate the phasis on which the date of the new moon depended? The visibility of the moon depends partly on its angular distance from the sun, on which its apparent size depends, and partly on its altitude above the horizon when the sun's light is faint. In order to calculate the true date of the phasis we ought to have a table of the requisite depression of the sun below the horizon at moonset, or of the requisite altitude of the moon above the horizon at sunset at different angular distances of the moon from the sun and we could be sure that the moon would become visible on the first fine evening after the altitude or depression had reached the quantity required by the angular distance of the moon from the sun. These figures would differ slightly for

[1] Ideler, I. 514.

different places according to differences in climate. Unfortunately no such figures are forthcoming, and until they are supplied us we must be content with something more vague. Most calculators have been content to quote a mean interval which must elapse after the conjunction before the angular distance of the moon from the sun is sufficient to make it possible to observe the moon at the following sunset. Wurm, Turner, and Bacon have all adopted this method. If the interval in question were anywhere near a constant, a reliance on its mean value would be sufficient for our purpose. Unfortunately, however, it varies by about three days according to the position of the moon in her orbit, quite apart from any considerations of weather, or of the interval that must elapse after the moon has gained the requisite position and before the next sunset; and a difference of three days is quite enough to upset any calculations based on a correspondence between the days of the month and the days of the week. It is necessary therefore to throw aside all existing calculations of the phasis, and make new calculations which will take sufficient account of the astronomical circumstances which occasion this difference. These circumstances are three in number, the longitude, the latitude, and the anomaly of the moon. If the new moon takes place near the vernal equinox, each movement of the moon in right ascension will be accompanied by a rapid increase in its north declination or diminution in its south declination; the interval between sunset and moonset is increased to an observer in the northern hemisphere by the change in the moon's declination as well as by the change in its right ascension, and we have what are called long settings, and the moon is consequently in a position for observation sooner than it would otherwise be. Contrariwise if the new moon takes place near the autumnal equinox we have short settings and the phasis is retarded. Similarly, if the moon is some distance north of the sun at the time of new moon there will be a tendency towards an early phasis; if it be some distance south of the sun there will be a tendency towards a late phasis. If, again, the moon is near perigee it will move quickly; its right ascension and time of setting will

advance rapidly, and there will be a tendency towards an early phasis; if it is near apogee, it will move slowly, and there will be a tendency towards a late phasis. In default of a table such as I have suggested above, I have fallen back on Hevelius's rules, which are the result of his own observations at Gedanum in Poland, and may be seen in his Selenographia, p. 273 and following. He found that if all these circumstances were favourable, the moon, if new in the morning, would be visible in fine weather the same evening, if new in the afternoon or evening it would be visible the following evening. If two circumstances only were favourable, the phasis would be delayed one day, if one only were favourable, it would be delayed two days; if all three were unfavourable, it would be delayed three days; always presupposing fine weather. No important modification need be made for the latitude of Jerusalem. The influence of the latitude and longitude of the moon in either hastening or retarding the phasis ought to be slightly reduced, but as these two influences work in opposite directions at nearly all the new moons which I shall have to consider[1], I may take it that the necessary corrections will be destructive of one another. As the rule is a vague one, I shall, wherever there appears to be any doubt as to its conclusion consider the day before or after (as the case may be) the one obtainable by the rule given above[2].

In the following tables I give (1) the date of the astronomical new moon, (2) the mean anomaly of the moon in centesimal degrees, (3) the longitude of the ascending node in centesimal degrees, all calculated with the assistance of Oppol-

[1] The year 35 is the only case where these two causes work in the same direction. There they both work in favour of an early phasis, but the early phasis is so decidedly supported that it would seem impossible to fix a later date on account of mere difference in latitude.

[2] Since this article was written, Mr C. H. Thomson has communicated to me two observations of new moons, made at Damascus. The new moon of 11.48 p.m., December 29, 1902, was visible on December 31, the date that Hevelius's rule would give, and the new moon of 3.49 a.m., March 29, 1903, was visible the same evening, one day earlier than the date that the rule would give. It will be observed that the two intervals between new moon and phasis differ by more than 24 hours, so that it is dangerous to employ a mean value for this interval.

zer's Syzygientafeln, empirical corrections being ignored, (4) the probable dates of the first appearance or phasis of the new moons of Nisan and of the preceding month during the years in question. In the case of the year 29, I give two alternative dates for Nisan out of deference to Mr Turner's opinion. In the case of the new moons of Nisan, I have added the consequent date of Nisan 14.

A.D.	Ast. New Moon.	Longitude of M.A.	A.N.	Phasis.	Ast. New Moon.	Longitude of M.A.	A.N.	Phasis	Nisan 14
28	14 F., 9 a.m.	218	116	16 F.	15 M., 2 a.m.	247	114	17 M.	W. 31 M.
29	2 F., 9 a.m.	162	95	4 F.	4 M., 3 a.m.	191	93	6 M.	Su. 20 M.
					2 A., 8 p.m.	220	92	5 A.	Tu. 19 A.
30	21 F., 5 a.m.	135	73	23 F.	22 M., 8 p.m.	164	71	25 M.	Sa. 8 A.
31	11 F., 0 a.m.	79	52	12 F.	12 M., 1 a.m.	108	50	14 M.	W. 28 M.
32	29 F., 1 p.m.	52	29	2 M.	29 M., 11 p.m.	81	27	31 M.	M. 14 A.
33	18 F., 5 a.m.	396	8	19 F.	19 M., 1 p.m.	25	7	21 M.	Sa. 4 A.
34	7 F., 8 p.m.	340	387	9 F.	9 M., 6 a.m.	369	386	10 M.	W. 24 M.
35	26 F., 8 p.m.	313	365	28 F.	28 M., 6 a.m.	342	363	29 M.	Tu. 12 A.

[2] As Nisan 14 does not in any of these years appear to fall on a Thursday or Friday, it will be necessary to review the results obtained by this rough rule, and find years when an alteration of the date would be possible. If bad weather delayed the phasis in Nisan of 34 by one day, that year will be possible if the date of the Synoptists, Nisan 15, is right. Bad weather at the beginning of Nisan in 28 or 31 would not render these dates possible, unless the phasis of Adar had also been delayed, because the limit of 30 days for the length of that month would prevent a delay in the inauguration of Nisan. But if bad weather prevented the early visibility of the moon in both months, which is quite conceivable at this season of the year, the two dates in question become consistent with the Synoptists' date. For St John's date (Nisan 14) 30 and 33 are the only promising years. In the case of 30 the conditions are so pronouncedly in favour of a late phasis that it would be difficult to adopt an earlier date than that assigned above[1], but in the case of 33 the moon, if invisible on the evening of March 20,

[1] It would be more difficult to suppose an earlier phasis in this case than in the case of March 29, 1903. But, until we have more local observations to work upon, this date should be regarded as possible.

[2 If Fotheringham had used barley harvest full moons, he would have discovered one Friday Passover on April 27, 31 A.D.]

was only just invisible. It is a case where precise calculations are impossible, since the conditions of visibility are greatly affected by local circumstances, and in the absence of modern observations on the spot, the most that can be said is that it is astronomically slightly more probable that the crescent would not be visible till March 21. Since, however, the Sanhedrim was content with an observation by any two competent witnesses, an appearance which was generally just invisible might well be visible to two favourably situated witnesses, and would thus obtain sufficient legal evidence for the inauguration of a new month. This being so, A.D. 33 is the most likely date for the Crucifixion, if, as is generally supposed, it took place on Nisan 14, and if the beginning of the new month was fixed by observation, subject only to the rules mentioned above. I hope to show hereafter that the evidence of Jewish tradition is all against the existence of any more rigid rules.

(2) In answer to the second question raised above (p. 101) Mr Turner holds that a calendar rule must have existed, in order to enable strangers to visit Jerusalem at the right season for the Passover. This, however, would not be the case if adequate notice were given of each intercalation, and it is clear from Edujoth vii. 7 that down to the time of Rabbi Joshua and Rabbi Papias early in the second century no intercalation could be made, unless it had been ordered by the Sanhedrim before the Feast of Purim (Adar or Veadar 14), so that the date of the Passover would be known, with a possible error of one day, at least a month beforehand. This would be quite sufficient for the majority of the Jews of the dispersion, while a Jew who had made a very long journey to Jerusalem would not be likely to complain at having to wait a month for the feast. It was only after the destruction of the Temple that this long notice of the intercalation came to be thought unnecessary. We have moreover several references in the Mishna and Tosephta to deliberations in the Sanhedrim as to whether an intercalation should be made, and even to a provisional order for an intercalation, because Rabban Gamaliel could not be present when it was necessary to come to a decision. It would therefore appear that there was no possibility of calculating

the intercalations with certainty, but that the subject was discussed in the Sanhedrim whenever an elder considered an intercalation necessary.

Mr Turner finds a calendar rule governing intercalations in the well-known Christian rule by which the paschal full moon is that immediately following the spring equinox, and quotes Philo and Anatolius to prove that this rule was in use before the Christian era. As Philo is one of the authorities to whom reference is made by Anatolius, it will be unnecessary to consider his statements separately. Anatolius, as quoted by Eusebius, H. E. vii. 32, is arguing against those who place the first month in the last sign of the zodiac. He enumerates Philo, Josephus, Musaeus, the two Agathobuli, and Aristobulus as having stated that the Passover must be sacrificed after the spring equinox, and also refers to Enoch as evidence that the first Hebrew month was at the time of the equinox. This last reference we cannot verify, but a comparison of passages in Philo and Josephus will enable us to estimate at its true value the list of authorities quoted for the more definite statement.

The passages of Philo most directly to the point are De Mose, ii. 169 (Mangey), where he tells us nothing more definite than that Moses placed the first month at the beginning of the spring equinox; De Decalogo, ii. 206, where he tells us that Moses placed the two feasts of seven days each, the one at the spring equinox, the other at the autumn equinox; and De Septenario, ii. 293, where a coincidence between the spring equinox and the month of Nisan is implied. These passages prove nothing more than a general coincidence of the season of Nisan and the Passover with that of the spring equinox.

The passage in Josephus which Anatolius had in his mind is probably Ant. iii. 10. 5, where we read τῷ δὲ μηνὶ τῷ Ξανθικῷ, ὃς Νισὰν παρ' ἡμῖν καλεῖται καὶ τοῦ ἔτους ἐστὶν ἀρχὴ, τεσσαρεσκαιδεκάτῃ κατὰ σελήνην, ἐν κριῷ τοῦ ἡλίου καθεστῶτος...καὶ τὴν θυσίαν...Πάσχα λεγομένην δι' ἔτους ἑκάστου θύειν ἐνόμισε. The phrase κατὰ σελήνην here does not of itself prove that the new moon was found by observation, rather than by calendar; it is probably used to distinguish the lunar month of Xanthicus from the solar months of the

same name, current in different parts of Syria in Josephus's day. Nor again is it right to press the phrase ἐν κριῷ, though this is probably what Anatolius did. Josephus has, according to his wont, specified the date according to the Jewish Calendar with the Macedonian month-names[1], and he adds the date according to the signs of the zodiac, which represent the season of the year; the latter coincidence is of no more importance to him than the former. It is clear, however, from the dates given in the Almagest (see Ideler, I. 396) that the strictly Macedonian Xanthicus might be nearly over before the sun entered Aries, and it is therefore at least probable that it often corresponded with the Hebrew Veadar; it would therefore appear reasonable to regard the phrase ἐν κριῷ τοῦ ἡλίου καθεστῶτος as merely indicating the normal position of the sun at the Feast of Passover, without defining any rule on the subject.

If therefore Philo and Josephus prove nothing but a general coincidence, have we any reason for supposing that Musaeus and the Agathobuli said anything more definite? The case of Aristobulus is clearer. Anatolius's statement about his view is so circumstantial that he must certainly have held that the true date for the Passover was after the spring equinox. But this after all is only the opinion of a rabbi, and, while it seems quite clear that the coincidence of the spring equinox and the position of the sun in the sign of Aries with the month of Nisan and the Passover was recognised, we have no evidence of a definite rule on the subject. From the passages quoted by Schürer (*op. cit.* I. ii. 371, note) we can see that other considerations besides the course of the sun were still considered in the time of Gamaliel II., though first the Christians and then the Jews were compelled to ignore these less calculable items, when there was no longer a court to pronounce upon them. At all events the Jews of the times of Anatolius and Chryso-

[1] There were a great many calendars in use in Syria and Palestine, all employing the same series of month names and often (or always) having both Semitic and Macedonian names. They differ widely as to the date when a particular month began, but agree in their identifications of Semitic with Macedonian names.

stom (or pseudo-Chrysostom)[1] did sometimes celebrate Passover before the spring equinox, and the modern Jewish Calendar is so constructed that for some centuries after it was framed Passover must often have fallen before the true equinox, and may still fall before the Tekupha of Nisan, which the calendar reformers probably regarded as the true date of the spring equinox[2].

But this does not render it unlikely that some empirical rule was employed by the Sanhedrim as a practical guide in determining intercalations. Simple observation was sufficient to determine whether an intercalary day was required at the end of the month, but a much more complicated observation would be required to determine whether some annual event such as the vernal equinox would or would not take place before the fourteenth day of the next month. By far the simplest way of fixing the Passover to a particular season of the year would be by means of a cycle of intercalations, such as had been in use among all the nations that had adopted the Syro-Macedonian Calendar. The testimony of the Pirke Rabbi Eliezer is not sufficient evidence to prove that the cycle of seven intercalations in nineteen years was actually employed at this date. When, however, we find in the Slavonic Enoch, xvi. 5—8, a description of the lunar year and of the nineteen years' cycle, we may infer that the Jews of the first century A.D. knew of this cycle as astronomically valid, in which case it is highly probable that it was allowed to influence the actual calendar. This view is confirmed by an analysis of the elements of the modern Jewish Calendar. Here we find elaborate rules for the duration of each month, the mean length of the calendar month being as correct as modern

[1] See also Const. Apo. v. 17.

[2] We may contrast with the opinion of Aristobulus the rule laid down in the Pirke Rabbi Eliezer, chapter 7, as quoted by Morinus (Exerc. 1 in Pent. Sam. p. 51), according to which the question of intercalation was to be considered if the Tekupha (i.e. the winter solstice) fell on Tebeth 20 or later, from which it would follow that the equinox might fall as late as Nisan 23. Maimonides regards Nisan 15 as the latest date for the equinox under the old calendar. According to Wurm in Bengel's *Archiv für die Theologie*, ii. 264, the ears of corn which had to be offered on Nisan 16 would seldom be ripe before the middle of April.

astronomy can make it, while for the duration of the year no more elaborate contrivance exists than the simple rule that there shall be twelve months in ordinary years, and a thirteenth month in seven particular years of a nineteen years' cycle. The result is that the mean calendar year of the Jews agrees neither with the dog-star year of 365 days, 6 hours, by which the Tekuphas are still computed, and which was in general use at the time of the Jewish Calendar reform, nor yet with the equinoctial year of 365 days, 5 hours, 48 minutes, 48 seconds, which forms the basis of our calendar. The obvious inference from these facts is that the calendar reform was only intended to affect the duration of lunations; it may have substituted calendar rules for simple observation in this respect, and have left untouched the old calendar rule, governing intercalary months, which had caused no dissatisfaction. If we apply the existing nineteen years' cycle to the period before the calendar reform, we shall find for the age of Anatolius and Chrysostom (or pseudo-Chrysostom) those occasional Passovers before the vernal equinox which aroused their wrath, as inconsistent with their views of the true Paschal term, and we shall find for the years 28–35 the same dates for Nisan as I have adopted above. In the year 29, for which I have given alternative dates, the nineteen years' cycle would support the later.

Mr Turner attempts to explain the early Passovers mentioned by Anatolius and "Chrysostom" by the ingenious suggestion that the Jews dated the equinox earlier than their Christian contemporaries, and supports this by a statement that the farther back the Church's Paschal calculations can be traced, the earlier does the equinox appear to have been set. Anyone acquainted with the difference between the Julian and tropical years will know that the farther back we go the later will the true equinox fall in the Julian year. It was in fact this apparent discrepancy that first led me to make a closer study of Mr Turner's whole article. A little examination will show that the dates he gives do not really form a series. A Christian father might obtain the date of the equinox or of the entrance of the sun into Aries in one or other of two ways; he might adopt the fixed date given in an almanack adapted to

a solar calendar, or he might rely on observation. Where the Julian Calendar was in use, the Paschal calculations are all based either, as at Rome, on the date March 18, which is the date of the entrance of the sun into Aries according to the Roman almanacks, or, as in Gaul in the second century (if we may believe the Magdeburg centuriators), in Cappadocia before the time of Epiphanius, and in Britain and Ireland as late as the eighth century, on the date March 25, which is the date of the spring equinox according to the same almanacks. Anatolius's date, Phamenoth 24 (= March 19), the Alexandrian date, Phamenoth 26 (= March 21), the date Dystrus (i.e. March) 22 of the Apostolical Constitutions, and the date Dystrus 23 of Aetius are all dates based on observation, and not one of these dates need be more than a day out for the time when the observation was made. As Ptolemy himself was capable of making an error of one day in dating the spring equinox, such an error need not trouble us, but an error of several days in a date obtained by observation would be almost impossible, and no serious error is found as a matter of fact, except where the Julian Calendar was in use. At the time of the Crucifixion the true date for the spring equinox was March 22 or 23, so that Mr Turner's theory that the equinox was dated March 18 or earlier would compel us to suppose that the Jews had dated it about five days too early.

In another paper I have endeavoured to show the true source of the erroneous dates given in the Julian Calendar for the entrance of the sun into Aries and for the equinox. They are in fact due to an error made by Sosigenes when constructing the Julian Calendar; they are the result of miscalculation not of bad observation, and are not found in the countries where other calendars were in use. It is indeed impossible for such an error to be made where a lunar calendar is the only one in use. In that case the fixed date of the spring equinox cannot be referred to a calendar date, but only to some other astronomical event from which it is supposed to be separated by a fixed interval. Such an event might be the annual rising or setting of a fixed star or it might be the pesition of the sun in a particular part of the heavens, or a point in the sun's course,

as indicated by the length of the shadow on a dial at noon. The date when the equinox was expected would in this way depend on some previous observation, possibly that of the winter solstice[1], and the interval would be discovered by observation and handed down by tradition. If the previous observation were of an annual rising or setting, the interval before the equinox would, owing to precession, be steadily diminishing, so that the equinox would have a tendency to fall earlier than was expected, but if the observation were of the position of the sun, the interval would be almost constant, and the equinox would fall at or very near the anticipated date. It is incredible that it could have fallen much later. A further argument, against an early date for the equinox, may be found in the modern Jewish date for the Nisan tekupha, viz. March 25, which must obviously have been taken from the Roman Calendar after the dispersion, and which is hardly likely to have supplanted an earlier and truer date referred to a similar calendar, which has left no trace in Jewish tradition.

It would appear therefore that there was no such fixed rule for the date of Nisan as Mr Turner supposes, and that early Nisans cannot be explained by an anticipation of the date of the equinox. Nor again does there appear to be any evidence in favour of Baron von Soden's view that there was never an intercalation in a sabbatical year. We can, however, be moderately certain that the full moons given above were those of Nisan, because in every case except that of 29 A.D. the full moon appears to fall well within the normal range of Nisan 14, so that any other date would place Nisan very early or very late.

I will now deal with Mr Turner's argument, as accepted by Canon Sanday, in favour of the claim of the new moon of March 4, 29 A.D., to be the new moon of the Nisan in which Christ suffered. The vague rule by which Nisan corresponded with the first sign of the zodiac does not seem to tell strongly against it, and even if it did, the astronomical reason for an intercalation need not have been deemed sufficient unless supported by the unripeness of the grain or of the fruit trees or

[1] *Vide supra* p. 111, note 2.

by some similar reason (Schürer, *op. cit.* I. ii. p. 371, Morinus, *loc. cit.*). It is therefore not impossible that this was the new moon of Nisan, but for Nisan 14 to fall on a Friday it would be necessary for the new month to begin on the evening of March 4. But the moon could only be visible that evening under the most favourable astronomical conditions, and it will be observed from the table above that the conditions were as unfavourable as they possibly could be for that season of the year. The moon when new was very near apogee which it was still approaching; it would therefore move at its slowest rate away from the sun. Again, in respect of latitude it had almost reached its southern limit, and was still travelling south. This would place it as low on the horizon as was consistent with its longitude, and would cause it to set before the light of the sun had faded sufficiently to render it visible. It is in fact very unlikely that the moon would be visible even on the following evening. Mr Turner attempts to meet this difficulty by the supposition that a calendar rule existed in virtue of which Adar never consisted of more than 29 days; this theory I have already attempted to refute. But even if the limitation of Adar to 29 days could be as old as the time of Christ, Mr Turner's date would still be beset with difficulties, because the easiest date for the phasis of Adar in A.D. 29 is February 4, so that this rule would give the evening of March 5 for the beginning of Nisan, and Saturday, March 19, for Nisan 14. Whatever date therefore be astronomically possible, 29 appears to be impossible.

By far the strongest part of Mr Turner's case is to be found in the mass of patristic evidence which he adduces on behalf of A.D. 29, and no astronomical difficulties in the way of this date could be quite conclusive unless accompanied by some explanation of its origin. The only authority whom he quotes in this connexion of whom I need make any special mention is one whose evidence would, if it had any value, tell in favour of 33, namely, the heathen chronologist Phlegon. That there was no eclipse in 33 corresponding to Phlegon's description is certain, and it is therefore certain that Phlegon must be in error, but the easiest correction is that suggested by Kepler (Eclog. chron.

1615, p. 126), though afterwards abandoned by him. This is to suppose that Phlegon refers to the eclipse of the sun of November 24, 29 A.D., which, according to the latest astronomical tables (Ginzel, Spezieller Kanon, 1899) was total in Nicaea and Bithynia, the district, that is, with which Phlegon connects the accompanying earthquake, and which attained its greatest phase at Nicaea at 10.46 a.m., and in the rest of Bithynia a little later, and must therefore have ended almost exactly at noon, the hour at which Phlegon fixes it. A further refinement in lunar theory might slightly shift both the belt of totality and the hour of the eclipse, but could not materially affect the applicability of the passage in Phlegon to the eclipse in question.

It will be most convenient to keep the question of the year of the Crucifixion and that of the day of the civil month together. No special chronological knowledge would be necessary for an early Christian computer to discover in what years a particular Julian date fell on a Friday, or what Julian dates fell on a Frday in a particular year. The balance of tradition is decidedly in favour of 29 A.D., and also in favour of March 25, and it may be observed that the earliest authorities quoted for these two dates are the same, 'Tertullian,' Hippolytus, and the Acts of Pilate. Of these 'Tertullian' and Hippolytus represent a western tradition which reckons its dates by the Julian Calendar and its years by the names of consuls. The Acts of Pilate may be of Palestinian origin, but its use of the Julian Calendar and consular dating suggests that this date is obtained from a western source. In addition to the authorities mentioned by Mr Turner, Mr Conybeare has called my attention to the practice of the Churches of Gaul, who, if we may trust the Magdeburg centuriators (Cent. II. 118, 56), celebrated the Pascha as a fixed festival on March 25 as being the date of the Crucifixion, just as they celebrated the nativity on December 25, and not on a corresponding lunar date[1]. The alternative reading, March 18, in the Acts of Pilate, which Mr Turner regards as the more authentic, should, if genuine, be derived

[1] Kepler (*op. cit.* p. 117) quotes Epiphanius for a similar practice among the Cappadocians.

from a western source. March 18 and March 25 are, as we have seen, the dates assigned in the Roman almanacks to the entrance of the sun into Aries and to the spring equinox respectively. A modern might overlook that fact. To an ancient it would probably be the most direct association that those dates possessed. The desire to know the true anniversary of the Crucifixion would probably be strong in the early Church, and the date preserved by tradition is just such a date as we might expect the Church to find. The nativity was, as is well known, celebrated on the "Natalis invicti solis" of the Roman Calendar, the Julian date for the winter solstice, our December 25. A rival date had arisen in Egypt, where another calendar was in use, but eventually a compromise was arrived at. Even if there had been no evidence to guide the Church to the date of the Crucifixion, what would have been more natural than to fix it at one of the four cardinal points of the year, and which of these was possible except the spring equinox, which the Roman almanacks dated March 25? But there was stronger evidence for this date. The Crucifixion was known to have been at the season of the Passover, and the chronological rule recognised by Philo which the Christians must themselves have applied to the feast of Easter, viz. that the season of the Passover was that of the spring equinox or of the entrance of the sun into Aries, would at once suggest the Roman date for the equinox as the nearest possible approach to the Roman date for the Crucifixion. The moveable feast of the Pascha was however of too long standing to allow this date to develop into a fixed fast or feast of the Roman Calendar, but it could easily become the traditional date of the Crucifixion. The alternative date, March 18, to which the entrance of the sun into Aries was assigned, became, as we have seen above, the earliest Roman Paschal term, and may well have been an early Roman or Julian date for the Crucifixion.

Now 29 is the only year at all possible for the Crucifixion, in which March 18 or 25 fell on a Friday, and it would therefore be the most natural date for the Crucifixion for a Church using the Julian Calendar. Furthermore, although the date is older than any of the Easter Calendars, the fact that March 25

was the true date for Good Friday in the year 29 according to Hippolytus's cycle and also according to the 84 years' cycle which was afterwards adopted in Rome, would probably give this date a great advantage in argument over dates on which Good Friday could not possibly have fallen. The date A.D. 29 may of course have originated in the fifteenth year of Tiberius of Luke iii. 1, and the date March 25 (or 18) in the way I have indicated. They would easily coalesce.

This view of the origin of the traditional date is strengthened by a consideration of its rivals. The Basilidians were perhaps the first to compile a series of Christian anniversaries for different dates in the solar year. Assuming that they employed the Alexandrian Calendar, their dates for the Crucifixion would correspond to March 21, April 20, April 14. All these may have some connexion with 'dies aegyptiaci' of Philocalus, but, what is of more importance, March 21, which Clement[1] mentions first, and which may therefore have been the prevailing date among the Basilidians, would be the true date for the spring equinox in the age of Basilides, and, as has been shown above, a serious error in the date of the equinox is not likely to have been made in Egypt. The other dates mentioned by Mr Turner, viz. March 23 and March 20, are probably both dates for the spring equinox, perhaps of Syrian and Egyptian origin respectively[2], and it is significant that all the dates for the Crucifixion, with the exception of two of the Basilidian dates, are within the range of dates for the entrance of the sun into Aries or of the spring equinox. If they had a common origin in a date referred to the Roman Civil Calendar, it is difficult to explain why the errors in the tradition should all lie on the later side of March 18 or on the earlier side of March 25.

[1] Strom. i. 147. [2] See p. 113 above.

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